

Coupling green electricity and hydrogen

Hydrogen Innovation Fund Project Details

Proponent: HydroMega Services Inc.

Partner: none

Project Type: Feasibility study

Project Total Cost: \$250,000

Year Contracted: 2023

Location: Cochrane, Ontario

Status: Open

Project Objectives

The objective of the study is to assess the technical and economic feasibility of retrofitting an existing 27 MW natural gas generation facility in Cochrane, Ontario by installing an electrolyzer powered by on-site renewable electricity generation (solar and wind) to produce and store green hydrogen. The study will analyse two potential use cases for the hydrogen produced: 1) injecting it directly into the local heating network (Power-To-Gas-To-Heat: PGH), and 2) blending it with the natural gas fuel for the existing gas turbines (Power-To-Gas-To-Power: PGP) to support both local and provincial electricity needs.

Outcomes

If successful, this study will demonstrate that blending hydrogen with conventional fossil-fuel generation facilities can support both wholesale grid needs and local reliability.

This study is expected to shed light on the feasibility of upgrading conventional fossil-fueled facilities to blend hydrogen with natural gas, including the costs, barriers and opportunities associated with implementation.

Expected learnings include:

- Technical report analyzing the potential solutions to upgrade and retrofit an existing natural gas electricity generating facility with green hydrogen production and storage powered by renewable electricity from wind and solar.
- Case studies analyzing the optimal use-cases for co-located green hydrogen production (e.g. PGH, PGP)
- A proposed wholesale participation model and hydrogen solution offer curve.
- Comparative performance analysis between green hydrogen with other zero-emission technologies and the role green hydrogen can play to decarbonize the electricity grid.
- Economic analysis on the feasibility for retrofitting existing natural gas facilities.